REMARKS

The present application is a continuation of Serial No. 10/380,962, filed on March 20, 2003.

During the prosecution of parent application Serial No. 10/380,962, the Patent & Trademark Office took the position that Figure 3 of U.S. Patent No. 4,088,357 illustrates a cover 2 extending beyond a side flange 22, as recited in pending Claims 1 and 8. Applicant has amended these claims in the present continuation application to recite a bumper beam in which a cover extends a predetermined distance beyond an outermost flange. The outermost flanges illustrated by Figure 3 of the '357 patent are designated by reference numeral 16, and form part of the composite bumper illustrated by the drawings. The cover 2 does not extend beyond the flanges 16.

Claims 2 and 5 - 7 of the present continuation application correspond to Claims 2 and 5 - 7 of the parent application, except that the form of Claim 6 has been revised to correct a minor typographical error in the claim as originally presented in the present application.

Dependent Claims 9 and 10 further define the nature of the invention. These claims recite that the distance which the cover extends beyond the outermost flange of the bumper beam is selectively adjustable. These claims are supported, for example,

at page 1, last paragraph, and page 3, first paragraph, of the original specification. This aspect of Applicant's invention is not taught or suggested by U.S. Patent No. 4,088,357.

Claims 11 - 13 recite that the cover is wider than the hat beam. This aspect of the invention is not taught or suggested by the '357 patent which does not disclose a cover (1, 2) wider than the composite bumper.

Method Claims 5 - 7 are directed to a method of controlling the elevation of a bumper beam above the ground by adjusting the distance which a cover extends beyond a side flange of the beam. These claims are supported, for example, at page 1, last paragraph, and page 3, first paragraph, of the original specification. U.S. Patent No. 4,088,357 does not teach, suggest or recognize the methods defined by Claims 5 - 7.

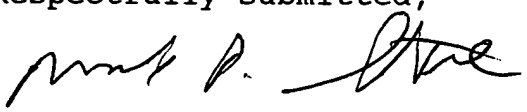
Claims 11 - 13 added by the present Preliminary Amendment are supported by original Claim 3 (which constitutes original disclosure to this application), and original drawing Figs. 3 - 4. The specification has also been amended at page 2 to expressly support Claims 11 - 13. The specification can properly be amended to recite features disclosed in the original claims and drawings without adding new matter to this application.

The specification has also been amended at page 1 to identify the parent application from which the present

application claims the benefit, and page 3 of the specification has been amended to correct a typographical error in the original specification. The revision to page 3 of the specification corresponds to the revision to page 3 of the specification made in the Amendment filed on November 10, 2003 in the parent application and is discussed at the last paragraph of page 6 of that Amendment.

Applicant respectfully submits that Claims 1 - 13 are allowable over the prior art applied during the prosecution of the parent application.

Respectfully submitted,



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A bumper beam for a vehicle and a method of adapting a bumper beam to various vehicle models

The present application is a continuation of Serial No. 10/380,962, filed on March 20, 2003, which is the United States National Phase of PCT/SE01/02239, filed on October 16, 2001.

Technical field

This invention relates to a bumper beam for a vehicle comprising a hat beam with a crown and side flanges, and a cover fastened to the side flanges, wherein the crown is fastened to the vehicle. The invention relates also to a method of adapting a bumper beam to various vehicle models built on the same platform when the ground clearance is not the same for all the models.

Background of the invention

The tests of bumpers are not standardised between USA and Europe and bumpers that cope with all the tests are heavy, big and expensive. In particular, in the pendulum tests, the pendulum does not hit at the same height in the USA test as in the European test. Some car models have therefore not the same bumper when sold in the USA as when sold in the EU. Various car and MPV models built on the same platform will have different ground clearance, that is, the platform will be at various heights. Therefore, various models built on the same platform usually have different bumper beams.

Object of invention and brief description of the invention

It is an object of invention to provide a bumper beam that is light in weight notwithstanding its large vertical extension. It is also an object to provide a bumper beam that can easily be adapted to vehicle models with different ground clearance and a method to adapt the bumper beam to such vehicles. To these ends, the cover of the bumper beam extends past at least one of the side flanges and has transverse stiffening means. The cover may be profiled transversely to provide for the stiffening means. One adapts the bumper beam to the various ground clearance by fastening the cover with different extension past at least one of the side flanges for different vehicle models. The invention is defined by the claims.

Brief description of the drawings

- Figure 1 is a top plan view of a bumper beam shown as an example of the invention.
- Figure 2 is a perspective view of the bumper beam shown in figure 1.
- Figures 3 and 4 are transverse sections taken along lines 3-3 and 4-4 respectively in figure 1.

Description of the illustrated and preferred embodiment of the invention.

The bumper beam shown in the figures comprises a hat beam 10 with a crown 11 and side flanges 12,13. A cover 14 is fastened to side flanges, suitably by being spot-welded thereto. The material in the hat beam and cover is formed sheet steel. Preferably, the material strength should be above 1200 N/mm^2 both in the cover and in the hat beam. The hat beam has its crown facing the vehicle and the crown is fastened to the vehicle body. When the bumper is the front bumper, the bumper beam can be fastened directly to the ends of the side rails of the vehicle platform or to crash boxes 15,16 fastened to the side rails as shown.

The cover 14 extends with a portion 17 past the lower flange 13 as shown in figures 3 and 4. <u>**As illustrated by figures 3 and 4, the cover 14 is wider than the hat beam 10.**</u> **In figure 1, the cover 14 is instead shown vertically centered on the hat beam 11. The cover is transversely profiled, preferably by being** trapezoidally shaped, and this profiling makes the cover transversely stiff, that is, vertically stiff. Each individual trapezoidal profile can be considered as a stiffener. The extending flange portion 17 will be strong enough to withstand being hit by the pendulum in the pendulum test. Thus the cover 14 can be wide enough to be hit by the pendulum both in the US pendulum test and the European pendulum test although the hat beam need not be that wide and the bumper will be only marginally heavier than a corresponding bumper that copes with only one of the pendulum tests.

Since the cover 14 is spot-welded to the hat beam 11, its position in height of the cover 14 on the hat beam 11 can easily be adapted to variations in height of the platform above ground for variants of a vehicle model.

With the same hat beam 11 mounted on the side rails of a platform used for a car as well as for a MPV, the same cover 14 can be used both for the car and the MPV. For the car, the cover 14 can then for example be spot-welded to the hat beam 11 and extend above the hat beam whereas it can be spot-welded to extend below the hat beam for the MPV, which has its platform higher above the ground.

When there are big variation in ground clearance between vehicles built on the same platform, it might be necessary to use different covers 14, ~~but such~~

In figures 1 and 2 is shown that the cover has portions 20,21 that are not corrugated. The portion 21 has a big hole through which a hook for towing may extend, which is fastened to the bottom of the hat beam. The cover 14 may have its transverse corrugation over its entire length.